

Comprehensive Moisture Management Systems





Ravin Group at a Glance

With a strong presence across the power and energy sectors, Ravin Group, established in the year 1950 has carved a niche for itself in the domestic and global market as Power Experts. Ravin Group comprises of various companies which are involved in various and diverse businesses such as manufacture of Energy Cables, EHV Cables and Installation, Solar Energy Systems, Retail Energy Products and Online Moisture Management Systems for Transformers. The Group has continuously evolved from manufacturing of Energy Cables, to EHV Installation Services, to Renewable Energy Solutions, and to Retail Energy Products.

At Ravin, the focus remains to embrace Evolving Technology and to Energising Lives.



Our Vision

The Group is dedicated to maintaining its large global presence. The Group upholds its culture of care, trust, empowerment and constant learning while meeting expectations of employees, stakeholders and society.

Our Mission

We at Ravin Group are committed to give our customers the best possible products & services at most competitive prices as per agreed standards and within the stipulated time frame, to their entire satisfaction.

We shall strive relentlessly towards a zero defect culture through the commitment of each and every member of our Company.

And of course, we shall not stop there, but keep on going.



OUR VALUES

Our strongly imbibed core values of **Safety**, **Dependability** and **Sustainability** comes across as our strength and the basis of our growth and development across the decades of our operation.

SAFETY

- Our products always adhere to international safety standards. SAFETY to the users, the public in general, our employees and the environment is our priority
- Safety coincides with production and quality and is an integral part of our business
- A series of pioneering safety innovations has made Ravin a leader in safety over the past few years

DEPENDABILITY

- We realise the importance of customer satisfaction which is a result of unmatched DEPENDABILITY
- Dependability is living up to our word and fulfilling our promises
- Dependability is supplying products which do not fail
- Our customers, employees, and communities deserve our respect, honesty, and expert abilities
- When a project is completed, our goal is to be remembered as a trusted partner that delivered the promised results. And to be relied on again

SUSTAINABILITY

- SUSTAINABILITY for us is an approach that integrates people, planet and profit, resulting in a greener and safer tomorrow
- Sustainability involves our ongoing commitment to communities, stakeholders, the environment, health and safety and the economic performance of our business
- Our aim is to promote a responsible culture and implement robust corporate systems to consistently meet our sustainability goals
- We understand that best practice in these areas will help us to be a leading, international, diversified, and upstream products company
- That is why we are working towards integrating sustainability practices across all our operations and business activities so they can grow in the same manner and pace



In providing a unique approach to process design, construction and project management, Ravin's engineering expertise, production and process knowledge can provide a range of services to meet requirements like:

- Feasibility Study
- Customised Manufacturing
- Installation
- Design
- Equipment Supply
- Commissioning

Through our process, engineering prowess and reputation, we can deliver a diverse range of process solutions to both domestic and overseas markets.

Our customer base extends to major national and international companies, worldwide private and public sector clients, all of whom have benefited from our ability to adapt technologies and tailor our services to meet the specific requirements of a project.



OUR VARIOUS VERTICALS

CABLING SOLUTIONS

We offer a complete range of cabling solutions for LV, MV, HV, EHV cables 1.1 kV to 400 kV and also provides services like Cable Jointing, Cable Laying and other specialised services for complete EPC of HV & EHV solutions from 11kV to 400 kV.



EPC PROJECTS & SERVICES

We Provide a wide range of solutions including design, supply, installation and maintenance of Extra High Voltage systems for power transmission directly from power plant sites to primary distribution networks.



JOINTING SERVICES

We install joints and terminations for all voltage from 11 kv onwards to 400 kv with the back up of a fully trained and certified jointing team, with an experience of thousands of joints and terminations both in India and outside India.



RETAIL ENERGY PRODUCTS

Ravin Group has recently ventured into highly advanced and forward looking vast retail energy market, which has a huge customer base because of the various smart communication and battery driven devices being offered today. The 'energy solutions' market is particularly meant for people on the go, as well as for the rural market which does not have access to electricity.

RAVIN RETAIL ENERGY PRODUCTS comprise of three categories namely: Power Banks, Solar Chargers and Solar Lanterns which provide a smart and convenient new way to charge smart phones, mobiles, tablets or iPads, MP3 players etc. Homes, shops, offices can be lit and powered, specially in locations where it is not possible, or predictable, to get conventional power points. Thanks to Ravin's Energy Products, homes can be powered and devices fully charged for days without access to conventional sources of electricity.

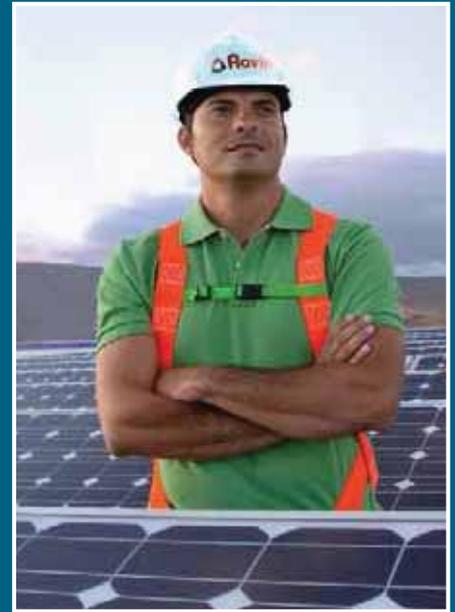


RENEWABLE ENERGY

At Ravin, we are committed to fulfil the demand-supply gap of the Indian energy sector by harnessing the unlimited energy of the sun.

Today, the world is facing a threat of exhaustion of fossil fuels. Sun, being the biggest power plant in our galaxy, is always available to provide clean and reliable energy to the world. We believe that this same solar power will shape the future of our planet – providing a cleaner and greener alternative to the conventional sources of energy.

Our global approach and research in technology is aimed towards delivering sustainable and efficient solar solutions to all our clients. Improving solar module efficiencies while holding down the cost per cell is an important goal for us. We are also working towards innovation and quality process and products, thus raising the bar - for ourselves and the industry.



TRACKING SYSTEMS

Ravin has recently introduced an innovative and path-breaking tracking system which is a device that orients various solar energy generating components towards the direction of the sun. The revolutionary tracking systems help increase your energy yield up to 15% to 35% with its innovative design, thus increasing your ROI.

WE OPERATE AS AN INTEGRAL BUSINESS UNIT

- Commercial & Tendering Team
- Project/Contract Management Team
- Systems Design/Installation Engineering
- Full range capability for installation & tools supported by logistics team
- Full in-house testing & commissioning capability – specialised facilities, testing engineers
- *Capability to execute turnkey projects up to 400 kV*

Ravin has a proven track record of delivering projects
SAFELY, ON TIME and IN BUDGET.

POWER EQUIPMENTS

We at Ravin provide molecular sieve moisture management system solutions for power transformers manufactured under TRANSEC, UK, in India.

TRANSEC



Overview

- Power and distribution transformers are the most important and expensive assets in an electrical power network.
- Compared to other equipment, they are very reliable and require very little maintenance since they have no continuous moving parts.
- However, the insulating paper material, being organic, degrades with time, thereby reducing the life of the transformer.
- Water is a by-product of the decomposition of the long chain hydrocarbon glucose molecules of cellulose that makes up the paper and pressboard insulation.
- Excessive moisture will saturate the insulation and increase its conductivity.
- At higher temperatures, vapour or free moisture can develop increasing the high risk of partial discharge and flashover faults.
- Moisture has a great influence on the life expectancy and the load carrying capacity of a transformer. Moisture reduces the electrical and mechanical strength of the solid insulation.
- In general, the mechanical life of the insulation is halved for each doubling of the ppm water content; the rate of thermal deterioration of the paper is directly proportional to its water content.

DESCRIPTION

- Ravin Infraproject Pvt. Ltd. introduces TRANSEC (India), an on-line molecular sieve, developed and manufactured in India under license from TRANSEC (UK), that continuously removes water from the oil and from the paper insulation in a power transformer.
- This on-line process not only reduces insulation ageing, but also improves the dielectric strength of the oil. By constantly reducing the level of water contained within the oil & solid insulation, where over 95% of the water is trapped, will migrate into the oil to maintain the natural water equilibrium.
- In this way, water gradually moves from the solid insulation, to the oil, and then is trapped by the molecular sieve.
- TRANSEC is designed to be a slow, non-invasive, gradual process, that lowers the ppm level of water in the oil to maintain the natural hydrostatic equilibrium, and hence, significantly reduce the water content within the solid insulation.

CL3AM PERFORMANCE



- The TRANSEC system has the capacity to remove approximately 10 litres of water from a transformer before saturation, but the rate at which it will adsorb water will depend on many factors, mainly, on the level of water present in the oil, and the temperature range through which the transformer will operate.
- The design flow rate of the pumped oil is nominally 60 to 90 litres per hour to give maximum adsorption through the molecular bed. The oil temperature does not have to be elevated to give optimum adsorption.
- The process will slow down as total saturation is reached. Higher the temperature of the transformer, the faster is the rate of ageing of the paper insulation material.
- Typically, a CL3AM on a wet (insulation water content 4% by dry weight) transformer operating in a hot humid ambient climate might saturate in 6 to 9 months.
- A CL3AM on a dry (insulation water content 1% by dry weight) operating at 50°C might take 24 months to saturate.
- A CL3AM on a brand new transformer (insulation water content 0.3% by dry weight) might take 5 years before saturation.
- The product is judged on the amount of water that is removed, which is reported to the client when the cylinders are replaced and regenerated.

We are the only turnkey infrastructure energy solution provider licensed to manufacture and install TRANSEC in Indian markets. Our sophisticated infrastructure; encompassing superior equipments with a team of highly qualified experts enables us to offer full installing and maintenance services.

TRANSEC MOLECULAR SIEVE IS SUITABLE FOR

➤ **MID LIFE TRANSFORMERS**

To reduce the % moisture in insulation to extend life, and reduce the risk of a life-threatening event

➤ **NEW TRANSFORMERS**

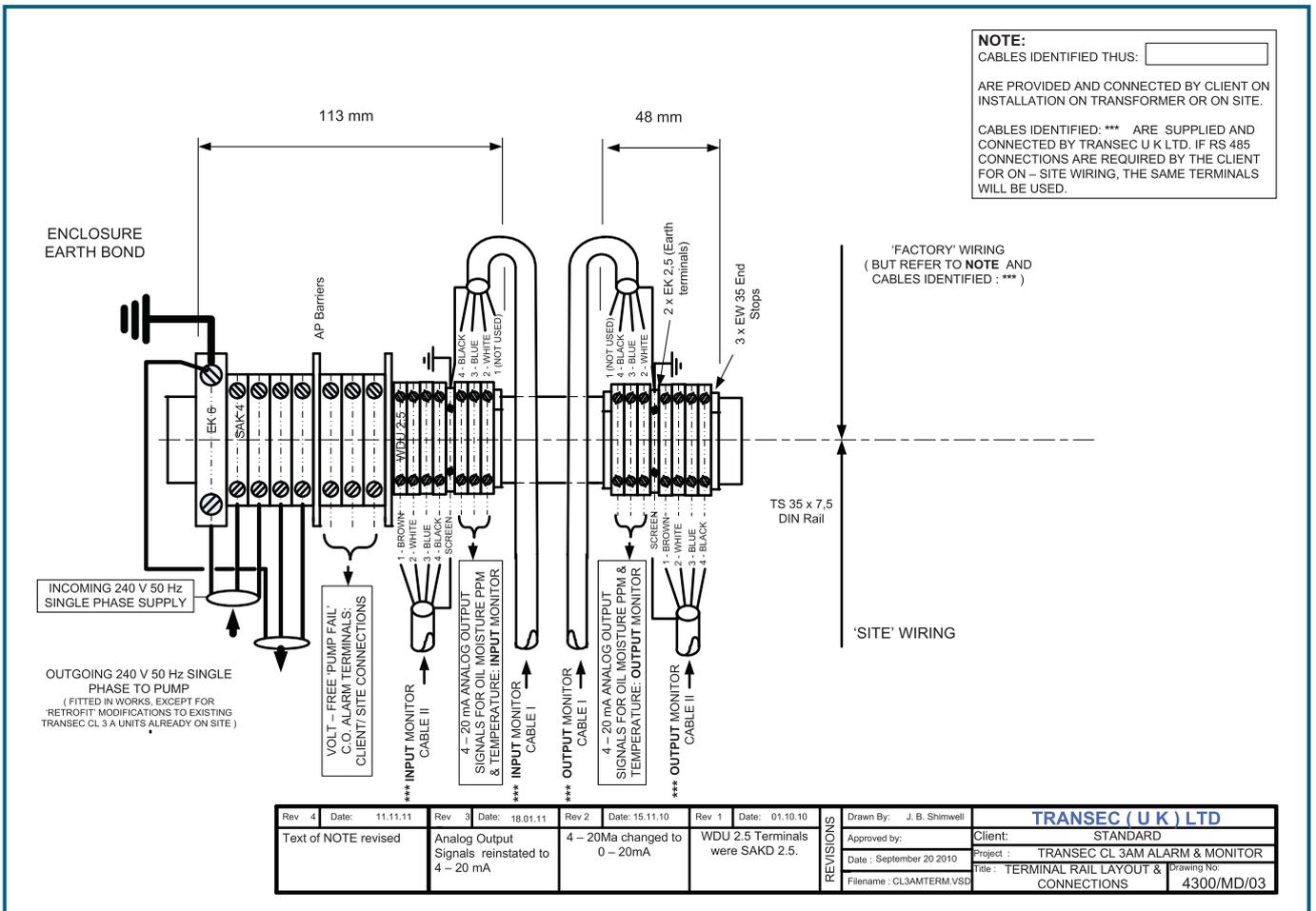
To maintain the insulation of a new transformer in 'new condition', and extend life of the asset

➤ **STRATEGIC SPARE TRANSFORMERS**

To maintain an off-line transformer in a dry condition prior to being commissioned



TECHNICAL SPECIFICATIONS OF TRANSEC SYSTEMS



- Reduces insulation ageing
- Improves dielectric strength of oil
- Increases reliability of the transformer
- Increases the life of the transformer
- It is an online process, which removes moisture from transformer while the transformer is on, therefore shutdown can be avoided
- No moving parts, except the pump, hence least chances of failure or breakdown making it maintenance free
- Displays the ppm water in oil along with the temperature (with monitoring)
- Can be installed directly on a transformer, no additional protection required

TRANSEC IS APPROVED BY POWER UTILITIES IN INDIA LIKE

- Power Grid Corporation of India Ltd.
- National Thermal Power Corporation (NTPC)
- Maharashtra State Electricity Transmission Company Ltd.
- Andhra Pradesh GENCO
- Reliance Energy and many more

TRANSEC IS THE PREFERRED CHOICE OF

- Crompton Greaves
- Alstom
- ABB
- Emco
- Transformers & Rectifiers
- TBEA, China
- Hyosung, Korea
- Hyundai, Korea
- BHEL
- BTW
- MSETCL
- Reliance Energy
- ZTR - PJSC
Zaporozhtransformator



With a global approach and comprehensive research, Ravin helps in delivering world-class solutions with a high degree of innovation and quality. Backed by a cutting-edge technology and high levels of customer-centricity, Ravin provides clients with the highest degree of quality standards. The project management team at Ravin also ensures that each component exhibits outstanding electrical and mechanical properties that makes it the preferred choice for customers across the globe.



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